Fort Atkinson, Jefferson county: a severe frost occurred on the 30th, but no serious damage resulted in this locality.

Palmyra, Jefferson county: a heavy frost, killing all early vegetation, occurred during the night of the 15th–16th.

Darlington, La Fayette county: the frost of the 29th was very severe in this locality; fruit and vegetables were badly damaged.

White Water, Walworth county: the frost on the night of 28–29th damaged the corn, barley and potato crops; all vegetables in lowlands were destroyed.

ICE.

Ice formed during May as follows:

Connecticut.—Bethel and Southington, 30th; one-half inch thick.

Indiana.—Wabash, 29th.

Iowa.—Guttenberg, 29th.

Maine.—Portland, 7th, 29th; Gardiner, 17th, 31st; Eastport, 30th.

Massachusetts.—Dudley, 29th, Heath, and Rowe, 29th, 30th, 31st; Fall River, 30th; Cambridge, 31st.

Michigan.—Detroit, 29th; Port Huron, 29th.

Nebraska.—Clear Creek, 2d.

New Jersey.—Readington, 29th.

New York.—Dannemora, 28th, 29th; Humphrey, and Buffalo, 29th; Albany, and Menand Station (near Albany), 30th, one half inch thick.

Ohio.—Columbus, Cleveland, Wauseon, and Garrettsville, 29th.

Pennsylvania.—Easton, and Pittsburg, 29th; Dyberry, and Grampian Hills, 29th, 30th; State College, and Wellsboro', 30th.

Rhode Island.—Block Island, Narragansett Pier, and Point Judith, 30th.

Vermont.—Strafford, 15th, 29th, 30th.

Wisconsin.—Milwaukee, 29th, from one-eighth to one-fourth inch thick.

PRECIPITATION.

[*Expressed in inches and hundredths.*]

The distribution of rainfall over the United states and Canada, for May, 1884, as determined from the reports of nearly eight hundred stations, is exhibited on chart iii.

In the first column of the following table is shown the average precipitation for May in each of the various districts, for several years, as determined from observations made at the Signal Service stations; in the second column are given the averages for May, 1884; and the third column shows the excess or deficiency of May, 1885, as compared with the average:

Average precipitation for May, 1884.

Districts.	Average for May. Signal-Service observations.		Comparison of May, 1884, with the average for several years.
	For several years.	For 1884.	
	Inches.	*Inches*	*Inches.*
New England	3.61	4.39	0.78 excess.
Middle Atlantic states	2.77	2.31	0.46 deficiency.
South Atlantic states	3.42	2.83	0.59 deficiency.
Florida peninsula	3.63	2.55	1.08 deficiency.
Eastern Gulf states	4.83	5.14	0.31 excess.
Western Gulf states	5.03	9.40	4.37 excess.
Rio Grande valley	2.68	5.50	2.82 excess.
Tennessee	3.84	3.62	0.22 deficiency.
Ohio valley	3.60	4.66	1.06 excess.
Lower lake region	3.10	3.14	0.04 excess.
Upper lake region	3.60	3.00	0.60 deficiency.
Extreme northwest	3.35	2.14	1.21 deficiency.
Upper Mississippi valley	4.62	3.46	1.16 deficiency.
Missouri valley	4.46	2.59	1.87 deficiency.
Northern slope	2.90	1.80	1.10 deficiency.
Middle slope	4.28	5.13	0.85 excess.
Southern slope	2.01	5.41	3.40 excess.
Southern plateau	0.29	0.66	0.37 excess.
Northern plateau	1.38	0.70	0.68 deficiency.
North Pacific coast region	2.37	1.22	1.15 deficiency.
Middle Pacific coast region	0.99	0.16	0.83 deficiency.
South Pacific coast region	0.29	1.00	0.71 excess.
Mount Washington, N. H.	4.36	9.54	5.18 excess.
Pike's Peak, Colo.	3.61	2.90	0.71 deficiency.
Salt Lake City, Utah	2.40	1.78	0.62 deficiency.

The precipitation for May, 1884, exceeded the average in New England, the Ohio valley, middle slope, and over the southern part of the country from the Gulf states westward to the Pacific coast. In the western Gulf states and Rio Grande valley, the monthly precipitation was nearly double the May average, and in the southern slope it was nearly three times as great as the average; in the lower lake region it was normal; on the Atlantic coast south of New England, in Tennessee, and in the northern districts, from the upper Mississippi valley and upper lake region, westward to the Pacific coast it was below the average, the deficiencies ranging from 1.10 to 1.87 from Illinois and Missouri northwestward to Minnesota, Dakota, and Montana; in the northern plateau, north and middle Pacific coast regions it was less than one-half the average amount for May.

Table of excessive and greatest monthly precipitation.—May, 1884.

Station.	Specially heavy.		Largest monthly.	Station.	Specially heavy.		Largest monthly.
	Date.	Amt.	Amount.		Date.	Amt.	Amount.
Alabama.				*Missouri.*			
Mobile	4, 5	2.20	8.48	Pierce City	13	3.50	
Do	25, 26	2.96		*Nebraska.*			
Arkansas.				Fort Robinson	21	2.00	
Mount Ida	1	2.50	10.25	*New Hampshire.*			
Do	20	2.25		Mt. Washington	20, 21	3.17	9.54
Texarkana	2	2.46	7.49	*New Jersey.*			
Do	19, 20	3.65		Sandy Hook	6, 7	2.01	
Little Rock	3, 4	2.25	7.37	South Orange	10	2.25	
Prescott	3	4.00	6.28	*New Mexico.*			
Lead Hill	1	2.69		Fort Union	31	2.85	
Pine Bluff	14, 15	4.05		*New York.*			
Madison	22	2.50		Dannemora			6.62
Colorado.				New York City	6, 7	2.20	
West Las Animas	23	2.12		Fort Columbus	8	2.08	
Connecticut.				David's Island	8	2.28	
New London	6, 7	2.19		*North Carolina.*			
Dakota.				Charlotte	17	2.17	
Webster	21	4.01	9.19	*Ohio.*			
Do	23	2.95		Sidney			6.27
Fort Meade	19, 20	3.17	8.58	Canal Dover	27	2.15	
Florida.				*Pennsylvania.*			
Fort Barrancas	5	8.15	9.75	Wellsborough	6	2.60?	9.36?
Pensacola	4, 5	4.01	6.64	Do	20	2.16?	
Waldo			6.55	Do	27	2.89?	
Jacksonville	29	2.02		Blooming Grove	28	2.00	
Illinois.				*Rhode Island.*			
Greenville			7.89	Block Island	6, 7, 8	4.57	6.39
Mascoutah			7.70	Point Judith	7, 8	2.04	
Swanwick	1	2.03		Narragansett Pier	7, 8	2.38	
Peoria	12	2.25		*South Carolina.*			
Indiana.				Chester	25	2.01	
Laconia	4	2.10		Florence	25	2.99	
Indian Territory.				Yemassee	25, 26	3.90	
Cantonment	29, 30	4.05	6.95	*Tennessee.*			
Fort Reno	15	2.90	6.97	Trenton			8.64
Kansas.				Bolivar			7.16
Allison	22	2.86	9.04	Memphis			6.46
Fort Scott	1	2.75	9.03	Milan	4	3.58	
Do	18	4.89		Brownsville	4, 5	3.02	
Sherlock	29	2.02	7.94	*Texas.*			
Elk Falls	20	2.50		Weatherford	1	4.00?	27.94?
Kentucky.				Do	3	3.99?	
Louisville	4	2.10		Do	14, 15, 16	7.11?	
Louisiana.				Do	20, 21	12.85?	
Shreveport	3, 4	3.47	14.47	Tyler	3	4.00	17.47
Do	21, 22	7.62		Do	21, 22	8.00	
Grand Coteau	5	2.50	14.03	Palestine	1, 2, 3	6.62	17.25
Do	15	3.37		Do	20, 21, 22	7.55	
Do	20	2.06		New Ulm	3	4.40	15.25
Do	22	2.31		Do	22	2.19	
Whiteville	18	2.18	11.34	Huntsville	1	2.15	13.65
Do	22	2.15		Do	3, 4	2.65	
Do	25, 26	2.34		Do	21 to 24	7.37	
Minden	3	2.27	9.64	Fort Concho	20, 21	3.14	13.50
Do	21, 22	4.75		Do	26, 27	5.25	
Monroe	22	2.94	9.59	Barnesville	16	2.50	
Cheneyville			8.75	Do	21	3.00	
Natchitoches	22	2.03	8.67	Do	22	3.00	
Opelousas			8.29	Waco	21, 22	5.13	9.66
Alexandria	16	2.15	7.28	Clarkesville	1	2.70	9.53
Maine.				Do	21	3.02	
Eastport	8, 9	2.14	6.79	Paris	1	2.20	8.80
Portland	20, 21	1.96	6.46	Do	3	2.01	
Maryland.				Do	21	2.09	
Emmitsburg	7	2.25	7.19	Galveston	3, 4	2.31	8.42
Do	14	2.00		Dallas	20, 21	4.91	8.25
Massachusetts.				Indianola	3, 4	3.76	7.94
Fall River	8	2.00		Do	22	2.03	
Minnesota.				Austin	1	2.32	7.85
Duluth	21, 22	4.02		Cuero	3	3.39	6.89
Mississippi.				Honey Grove	21	2.50	6.80
Brookhaven	5	2.32	11.83	Fort Elliott	29	2.75	6.29
Do	14, 15	2.77		Fort Stockton	7	2.69	
Do	24	2.10		Rio Grande	19	2.00	
Vicksburg	2	2.40	11.76	Cleburne	21	2.09	
Do	20	2.11		*Vermont.*			
Edwards	2	3.80	9.84	Newport			6.79
Natchez	2	2.02	7.63	*Washington Territ'y*			
Lake			7.08	Neah Bay	2 to 6	5.60	6.20
Jackson	2	2.71	6.08				
Hernando	4	2.62					

Table of smallest monthly precipitation May, 1884.

Station.	Amt.	Station.	Amt.
Alabama.		*California*—Continued.	
Birmingham	0.42	Spadra	0.55
Auburn	0.61	Galt	0.58
Opelika	0.63	Summit	0.60
Eufaula	0.91	Hollister	0.62
Arizona.		Turlock	0.73
Benson	0.00	Salinas City	0.75
Tucson	0.00	Needles	0.75
Casa Grande	0.00	Auburn	0.85
Willcox	0.00	Merced	0.86
Maricopa	0.01	*Dakota.*	
Phœnix	0.01	Fort Buford	0.14
Fort Bowie	0.23	Fort Sully	0.36
Texas Hill	0.28	Fort Hale	0.46
San Carlos	0.32	Fort Yates	0.62
Pantano	0.33	Fort Totten	0.98
San Simon	0.34	*Delaware.*	
Yuma	0.44	Delaware Breakwater	0.88
Fort McDowell	0.45	*Florida.*	
Fort Thomas	0.60	Key West	0.35
Wickenburg	0.64	*Georgia.*	
Fort Verde	0.72	Eastman	0.02
Fort Grant	0.81	Bainbridge	0.24
California.		Columbus	0.50
Menlo Park	0.00	Jessup	0.69
Rocklin	0.00	Quitman	0.80
Cisco	0.00	Athens	0.82
Mojave	0.00	West Point	0.97
Knight's Landing	0.00	*Idaho.*	
Antioch	0.00	Lewiston	0.50
Marysville	0.00	Cœur d'Alene	0.66
Martinez	0.00	Boisé City	0.92
Woodland	0.00	*Mississippi.*	
Byron	0.00	Okolona	0.31?
South Vallejo	0.00	Meridian	0.55?
Davis	0.00	*Missouri.*	
Redding	0.00	Harrisonville	0.75
Brentwood	trace	Phelps City	0.90
Princeton	0.05	Pleasant Hill	0.91
San Jose	0.05	*Montana.*	
Pleasanton	0.05	Helena	0.63
San Mateo	0.05	Fort Shaw	0.74
Sacramento	0.00	Fort Maginnis	0.76
Truckee	0.06	Poplar River	0.78
Benicia Barracks	0.10	*Nevada.*	
Tracy	0.10	Reno	0.00
Santa Cruz	0.11	Humboldt	0.08
Willows	0.12	Hot Springs	0.09
Angel Island	0.12	Brown's	0.11
Napa	0.13	Wadsworth	0.27
Presidio of S. F.	0.14	Carson City	0.29
Modesto	0.15	Otego	0.46
Loma Prieta	0.16	Toano	0.55
College City	0.17	Elko	0.65
Niles	0.18	*New Jersey.*	
Mammoth Tank	0.19	Barnegat City	0.79
Alcatras Island	0.20	Little Egg Harbor	0.97
Livermore	0.20	*New Mexico.*	
Ravenna	0.20	Deming	0.00
Orland	0.23	Fort Craig	0.19
San Francisco	0.23	*Oregon.*	
Brighton	0.25	East Portland	0.09
Boca	0.30	Eola	0.42
Suisun	0.30	Bandon	0.53
Petaluma	0.31	Fort Klamath	0.74
Stockton	0.31	Roseburg	0.85
Pajaro	0.32	Albany	0.89
Cape Mendocino	0.33	*South Carolina.*	
Gilroy	0.34	Jacksonborough	0.96
Farmington	0.35	*Virginia.*	
Monterey	3.30	Cape Henry	0.78
Lathrop	0.36	*Utah.*	
Los Angeles	0.39	Kelton	0.81
Chico	0.40	*Washington Territory.*	
Fort Bidwell	0.40	Fort Spokane	0.00
Lemoore	0.40	Ainsworth	0.07
Calistoga	0.42	Pleasant Grove	0.17
Indio	0.46	Bainbridge	0.55
Tulare	0.48	Spokane Falls	0.56
Daggett	0.49	Port Angeles	0.65
Alta	0.50	Dayton	0.81
Hydesville	0.50	Fort Townsend	0.97
Goshen	0.54	*Wisconsin.*	
Anaheim	0.54	Ripon	0.75
Oakland	0.55		

DEVIATIONS FROM AVERAGE PRECIPITATION.

The departures exhibited by the reports from the regular Signal Service stations are shown in the table of average precipitation for May, 1884.

The following notes in connection with this subject are reported by voluntary observers:

Arkansas.—Lead Hill, Boone county: monthly precipitation, 5.93, is 3.43 below the May average of the two preceding years.

California.—The following extract is taken from the "Alta California" of May 21st: "Merced, Merced county: the precipitation for the rainy season of 1883–4, is 20.37, which is by far the largest that has occurred since the settlement of this county—at least since observations were noted."

Connecticut.—Hartford: monthly precipitation, 3.36, is 0.04 below the May average.

Illinois.—Riley, McHenry county: monthly precipitation, 2.56, is 0.90 below the May average of the last twenty-three years.

Swanwick, Perry county: monthly precipitation, 4.84, is 0.71 above the May average of the three preceding years.

Anna, Union county: monthly precipitation, 4.90, is 0.79 below the May average of the last nine years.

Indiana.—Lafayette, Tippecanoe county: monthly precipitation, 3.31, is 2.24 below the May average of the four preceding years.

Vevay, Switzerland county: monthly precipitation, 5.17, is 1.64 in excess of the May average for the last fifteen years.

Logansport, Cass county: monthly precipitation, 3.42, is 0.76 below the May average of the last five years.

Wabash, Wabash county: monthly precipitation, 4.69, is 0.43 above the May average of the last eight years.

Kansas.—Independence, Montgomery county: monthly precipitation, 1.27, is 3.10 below the May average of the last twelve years.

Wellington, Sumner county: monthly precipitation, 4.79, is 0.68 below the May average of the last six years.

Lawrence, Douglas county: monthly precipitation, 3.57, is 0.72 below the May average of the last seventeen years.

Maine.—Gardiner, Kennebec county: monthly precipitation, 4.00, is 0.30 above the May average of a period of forty-eight years.

Maryland.—Fallston, Harford county: monthly precipitation, 3.86, is 0.95 above the May average of the last thirteen years.

Massachusetts.—Worcester, Worcester county: monthly precipitation, 2.50, is 1.84 below the May average of forty-five years. The total precipitation for the first five months of 1884, is 22.03 or 3.01 above the average for the corresponding period of the last forty-five years.

Missouri.—Saint Louis: monthly precipitation, 2.49, is 2.23 below the May average.

New York.—Palermo, Oswego county: monthly precipitation, 1.28, is 1.40 below the May average of the last thirty-one years.

Dannemora, Clinton county: monthly precipitation, 6.62, is 2.69 above the May average of the four preceding years.

Ohio.—Wauseon, Fulton county: monthly precipitation, 3.95, is 0.03 below the May average of the last twelve years. The largest May precipitation of that period, 6.25, occurred in 1880; the smallest 1.14 occurred in 1877.

Pennsylvania.—Dyberry, Wayne county: monthly precipitation, 3.86, is 1.69 above the May average of the last fourteen years. The largest May precipitation of that period, 5.19, occurred in 1882; the smallest, 0.36, occurred in 1875.

Texas.—New Ulm, Austin county: monthly precipitation, 15.25, is 9.10 in excess of the May average for the last twelve years, and is the largest May precipitation of that period; the smallest, 2.94, occurred in 1874.

Vermont.—Woodstock, Windsor county: monthly precipitation, 3.90, is 0.19 above the May average of the last fifteen years.

Virginia.—Wytheville, Wythe county: the precipitation for the first five months of 1884 is 5.92 in excess of the average for the corresponding period of the last twenty-one years.

Variety Mills, Nelson county: monthly precipitation, 2.94, is 0.47 above the May average of the last five years.

West Virginia.—Helvetia, Randolph county: monthly precipitation, 4.57, is 0.09 above the average of the last eight years.

SNOW.

Snow is reported to have fallen in the various states and territories, as follows:

Arizona.—Prescott, 1st. Fort Grant: a light fall of snow occurred in the upper part of the Pinaleno mountains on the 21st.

Colorado.—Denver, 1st; West Las Animas, Pueblo, and Fort Lyon, 2d; Fort Lewis, 1st, 2d, 4th, 14th; Pike's Peak, 1st, 2d, 6th, 7th, 10th, 12th to 16th, 19th to 30th.

Dakota.—Deadwood, 4th, 12th.

Kansas.—Westmoreland, 1st; Allison, 5th.

Maine.—Portland, 8th, 12th, 30th; Eastport, 12th; Bangor and Cornish, 30th.

Michigan.—Alpena and Fort Brady, 2d, 15th; Escanaba and Marquette, 2d.

Minnesota.—Moorehead, 1st.

Montana.—Fort Maginnis, 1st, 3d; Fort Ellis, 4th.

New Hampshire.—Mount Washington, 7th, 8th, 10th to 18th, 30th.

New Mexico.—Fort Union, 1st, 2d.

New York.—Oswego, 6th; Dannemora and Rochester, 16th; Humphrey, 29th, 30th.

Pennsylvania.—Grampian Hills, 3d, 15th, 17th; Catawissa and Wellsboro, 29th, 30th; Dyberry, 30th.

Vermont.—Lunenburg, 8th, 17th, 30th; Strafford, 15th; Burlington, 16th.

Wisconsin.—Milwaukee, 2d.

Wyoming.—Cheyenne, 1st, 4th, 12th, 13th; Forts Bridger and Fred Steele, 4th.

Mr. Barrand de Montford, of Dannemora, Clinton county, New York, furnishes the following meteorological data for May 16th, with the dates of snow storms occurring during May in former years:

Light sprinkling of snow from 4.20 to 5.15 a. m.; at 7 a. m., temperature 46°, wind e., of force 3, cloudy; 8.30 a. m., wind veered to nnw., and 9.10 a. m., snow began to fall, wind nw., temperature 41°; 10 a. m., storm continued to increase, snow falling heavilyand temperature falling; noon, temperature 39°, wind nw., moving furiously: snow ceased at 2.30 p. m., wind nnw., of force 5, temperature 38°; amount of snow-fall (melted) during the storm 0.34 inch. Since 1866 snow has fallen at this place during May as follows: 1866, May 25th, covering the ground to a depth of one inch; 1872, May 3d, heavy snow storm, fair sleighing; 1876, May 1st, snow, hail, and sleet; 1882, May 2d, light snow.

MONTHLY SNOW-FALLS.

[*Expressed in inches and tenths.*]

The following monthly snow-falls have been reported from the various states and territories during the month:

Arizona.—Prescott, 3.7.

California.—Summit, 2.0.

Colorado.—Pike's Peak, about 16.0.

Kansas.—Allison, 1.5.

Nevada.—Toano, 10.5; Otego, 8.0; Humboldt, 5.0.

New Hampshire.—Mount Washington, 18.8.

New York.—Dannemora, 3.4; Humphrey, 3.0.

Vermont.—Lunenburg, 2.0.

SNOW ON GROUND AT END OF MONTH.

[*Expressed in inches and tenths.*]

On the summit of Pike's Peak, Colorado, 54.0.

On the summit of Mount Washington, New Hampshire, trace.

SLEET.

Pike's Peak, Colorado, 11th, 12th, 15th, 17th, 19th to 22d, 27th, 29th, 30th, 31st.

Eastport, Maine, 12th.

Conception, Missouri, 1st.

Mount Washington, New Hampshire, 14th.

Salt Lake City, Utah, 4th.

Milwaukee, Wisconsin, 2d.

HAIL.

Arkansas.—Little Rock: a damaging hail storm occurred at this place on the afternoon of the 5th.

Georgia.—Tallulah, Rabun county: one of the most violent hail storms ever experienced in northeast Georgia occurred in this county on the 21st. The hailstones were as large as hen's eggs, and in some places accumulated to a depth of twelve inches. The wheat and oat crops were completely ruined and trees were stripped of their foliage. The storm lasted about twenty minutes.

Illinois.—Litchfield, Montgomery county: at 4.30 p. m. of the 5th, a violent hail storm occurred. It came from the southeast and was of about fifteen minutes duration. Many of the hailstones weighed several ounces, but owing to the light force of the wind the damage was slight.

Cairo, Alexander county: a heavy storm of wind and hail occurred on the night of the 11–12th between this place and Malden, Dunklin county, Missouri. Much damage was done to wheat fields, trees and fencing. The railroads were obstructed by having trees, etc., blown upon the tracks.

Collinsville, Madison county: a hailstorm occurred on the 12th, which caused considerable injury to buildings and crops. The hailstones measured one and one-half inches in diameter.

Iowa.—Fort Madison, Lee county: the hail storm of the 12th caused considerable damage by breaking window glass.

Kansas.—Fort Leavenworth: the hail accompanying the storm of the 17th caused considerable damage to crops eight miles south of this place, and the railroad tracks were badly washed.

Leavenworth: during a thunder storm on the afternoon of the 17th, a heavy fall of hail causing considerable damage to fruit, occurred five miles south of this station.

Wyandotte, Wyandotte county: a severe hail storm occurred on the 17th, the hailstones measuring from three to five inches in circumference and causing much damage to windows, etc.

Massachusetts.—Fall River, numerous windows were broken by the hailstones on the 17th.

Missouri.—Marshall, Saline county: the eastern part of this county was visited by a very heavy wind and hail storm on the night of the 12–13th. At Slater the hail covered the ground to a depth of three inches and caused much damage.

New Mexico.—Fort Union: nearly four hundred panes of window glass in the post hospital were broken by the hailstones during a violent storm on the 31st.

South Carolina.—Greenville, Greenville county: a destructive hail storm occurred in the lower part of this county on the 19th. The path of the storm was one-half mile wide and fourteen miles long, extending from Grove station to Fountain Inn. Much damage was done to the growing crops by the hail, which covered the ground to the depth of three inches. A very violent hail storm also visited Laurens county on the 19th. In Young's township the farmers suffered heavy losses. The hail at some points is reported to have covered the ground to a depth of three feet, and did not disappear from the ground until noon of the following day. A substantial bridge over the Enosee river was swept away by the storm, and many out-buildings on the farms visited by the storm were blown down. Mr. W. P. Coker of Cedar Grove, Laurens county reports that a destructive wind and hail storm visited that section at about 4 p. m. of the 19th, destroying wheat, oats, and cotton. The hail stones fell to a great depth, and on the following morning they were found to cover the ground, in places, to a depth of eighteen inches. The storm passed south of this place, coming from the northwest, its path being from one-half to one mile wide. The wind blew with sufficient force to unroof buildings and prostrate trees.

Tennessee.—Nashville: a severe hail storm occurred at Jackson, Madison county, in this state, on the 4th, which caused considerable damage to the growing crops and to buildings.

Texas.—Fort Stockton: from 4.03 to 4.12 p. m. of the 2nd, a heavy fall of hail occurred.

Fort Concho: a severe hail storm occurred at 6.40 p. m. of the 6th, lasting thirty minutes.

Fort Elliott: a violent hail storm passed over this station in a direction from north to south, between 5.25 and 5.45 p. m. of the 25th. The hail stones were of remarkable size and caused much damage to buildings and live stock. The storm extended over a strip of country from ten to fifteen miles long and four miles wide. The principal damage caused was to buildings. At Mobeetie, a few miles southeast of this station, the hail stones perforated the sheet-iron roofs of the buildings.

The noise preceding the hail storm resembled that produced by the moving of a railway train.

Fort Davis: one of the severest rain and hail storms ever experienced in this vicinity occurred on the 25th. The storm began at 12.40 p. m. and continued for forty minutes. The hail stones varied in size from that of a hickory nut to five inches in circumference, and fell with such force as to perforate roofs of corrugated iron and tin. After the storm there were counted in the tin roof of the building in which the Signal office is located, seventy-nine holes, one inch square. Damage amounting to $5,000 was caused at this place. The storm came from the northeast and passed off the southwest.

Virginia.—Marion, Smyth county: a thunder storm occurred on the afternoon of the 19th, which was accompanied by hail measuring from one-fourth to one-half inch in diameter. It is reported that at points several miles south the hail storm was unusually severe, the hail stones being several inches in circumference.

Wytheville, Wythe county: on the afternoon of the 19th a violent wind and hail storm occurred. The hailstones were one inch in diameter and caused much damage to window glass.

Wisconsin.—Sussex, Waukesha county: a severe hail storm passed south of Waukesha at about noon of the 5th, its path being about two miles in width. The storm was of about ten minutes duration, the hail covering the ground to a depth of two inches.

Hail storms of less violence were reported from the different districts on the following dates:

New England.—7th, 8th, 10th, 11th, 16th, 17th, 20th.

Middle Atlantic states.—5th, 9th, 11th, 15th, 16th, 19th, 23d, 26th, 27th.

South Atlantic states.—14th, 19th, 25th, 27th, 28th.

Western Gulf states.—3d, 5th, 16th, 20th, 21st, 24th, 26th.

Rio Grande valley.—7th.

Tennessee.—2d, 3d.

Ohio valley.—4th, 5th, 18th, 19th, 26th, 27th.

Lower lake region.—1st, 6th, 9th, 11th, 15th, 16th, 27th.

Upper lake region.—1st.

Upper Mississippi valley.—5th, 12th, 17th, 18th, 22d, 31st.

Missouri valley.—4th, 5th, 12th, 17th, 18th, 19th, 21st, 31st.

Northern slope.—15th, 26th, 28th.

Middle slope.—4th, 11th, 12th, 15th, 16th, 17th, 20th to 23d, 26th to 31st.

Southern slope.—2d, 20th, 25th, 26th, 27th.

Southern plateau.—2d, 15th, 18th, 19th, 20th.

Middle plateau.—9th, 14th, 15th, 21st, 27th.

Northern plateau.—3d.

North Pacific coast region.—3d, 5th, 9th.

Table of rainy and cloudy days, relative humidity, and dew-point for May, 1884.

Districts.	Rainy days.	Cloudy days.	Rel. humidity.*	Dew-point.
			Percentages.	°
New England	From 9 to 17	From 3 to 12	From 65.1 to 84.5	From 38.8 to 48.1
Middle Atlantic states	" 7 " 14	" 4 " 8	" 59.0 " 87.1	" 44.6 " 65.5
South Atlantic states	" 5 " 13	" 3 " 7	" 59.4 " 80.6	" 54.7 " 66.2
Florida peninsula	" 4 " 8	" 0 " 3	" 69.6 " 72.2	" 67.1 " 69.7
East Gulf states	" 8 " 18	" 4 " 10	" 63.0 " 78.0	" 59.7 " 66.2
West Gulf states	" 8 " 15	" 4 " 11	" 68.6 " 81.8	" 56.2 " 68.7
Rio Grande valley	" 10 " 11	" 2 " 11	" 66.1 " 81.0	" 65.7 " 69.4
Ohio valley	" 11 " 15	" 4 " 10	" 62.0 " 65.2	" 47.6 " 57.2
Tennessee	" 9 " 12	" 2 " 7	" 65.5 " 66.9	" 53.7 " 55.8
Lower lake region	" 10 " 17	" 5 " 12	" 61.3 " 75.0	" 42.9 " 47.8
Upper lake region	" 9 " 19	" 5 " 10	" 65.5 " 73.1	" 35.9 " 44.4
Extreme northwest	" 2 " 6	" 2 " 7	" 57.9 " 69.3	" 39.0 " 42.6
Upper Mississippi valley	" 9 " 16	" 4 " 13	" 56.2 " 69.9	" 42.6 " 55.3
Missouri valley	" 10 " 13	" 5 " 8	" 64.3 " 69.4	" 42.9 " 50.5
Northern slope	" 6 " 16	" 3 " 10	" 50.4 " 68.8	" 31.7 " 46.4
Middle slope	" 10 " 19	" 7 " 9	" 57.5 " 66.9	" 37.2 " 47.1
Southern slope	" 5 " 15	" 3 " 5	" 50.9 " 72.5	" 42.0 " 56.7
Southern plateau	" 0 " 7	" 1 " 2	" 26.7 " 56.8	" 28.6 " 40.7
Northern plateau	" 3 " 11	" 1 " 5	" 55.8 " 65.4	" 42.4 " 48.8
North Pacific coast region	" 6 " 10	" 5 " 9	" 63.9 " 81.3	" 45.9 " 47.4
Middle Pacific coast region	" 2 " 5	" 3 " 7	" 58.2 " 84.5	" 47.3 " 53.1
South Pacific coast region	" 4 " 10	" 3 " 10	" 40.8 " 80.4	" 45.8 " 54.9
Mt. Washington, N. H.	Eighteen	One	94.2	30.4
Pike's Peak, Colo.	Twenty-two	Four	88.0	17.4
Salt Lake City, Utah	Eight	Six	50.9	38.3

*Relative humidity corrected for altitude.

COTTON REGION REPORTS.

In the table below are given the temperature and rainfall averages for the several districts for May, 1884, with the means for the same month in the two preceding years:

Temperature and rainfall data for the cotton districts. May.

Districts.	Rainfall.			Temperature.							
				Maximum.			Minimum.			Extremes for May, 1884.	
	Average for May of two preceding years.	Average for May, 1884.	Departures.	Mean for May of two preceding years.	Mean for May, 1884.	Departures.	Mean for May of two preceding years.	Mean for May, 1884.	Departures.	Max.	Min.
				°	°	°	°	°	°	°	°
New Orleans	4.76	9.20	+ 4.46	84.6	82.6	— 2.0	62.0	65.0	+ 3.0	99	45
Savannah	3.10	1.76	— 1.34	84.6	88.7	+ 4.1	60.1	65.4	+ 5.3	103	45
Charleston	3.80	2.70	— 1.10	82.3	86.0	+ 3.7	58.0	62.8	+ 4.8	95	40
Atlanta	2.48	1.57	— 0.91	79.8	83.9	+ 4.1	54.4	60.5	+ 4.1	97	46
Wilmington	2.42	3.26	+ 0.84	80.8	82.4	+ 1.6	54.6	59.0	+ 4.4	96	38
Memphis	6.08	3.77	— 2.31	79.0	80.5	+ 1.5	55.8	58.2	+ 2.4	93	41
Galveston	3.71	12.20	+ 8.49	85.2	82.9	— 2.3	63.0	61.5	— 1.5	94	43
Vicksburg	4.83	8.87	+ 4.04	82.3	81.9	— 0.4	60.1	62.0	+ 1.9	90	49
Montgomery	2.87	1.32	— 1.49	83.0	86.4	+ 3.4	57.1	60.5	+ 3.4	98	30?
Augusta	2.40	2.55	+ 0.15	82.8	85.6	+ 2.8	58.4	59.8	+ 1.4	100	40
Little Rock	7.64	5.59	— 1.05	80.3	79.4	— 0.9	54.1	58.2	+ 4.1	91	20?
Mobile	3.81	3.87	+ 0.06	84.3	85.6	+ 1.3	58.4	61.5	+ 3.1	98	49

WINDS.

The most frequent directions of the wind during May, 1884, are shown on chart ii. by arrows flying with the wind. On the Pacific coast the most frequent directions were from the northwest and west; over the northern slope and northern plateau, from northwest to southwest; in the western Gulf states and southern slope, southerly; in the lower Missouri valley, northerly; in the lake region and upper Mississippi valley, variable; on the Atlantic coast, from the south and southwest.

HIGH WINDS.

On the summit of Pike's Peak, Colorado, the highest wind velocity was 70, n., 5th; other dates on which velocities of fifty or more miles per hour were reported are as follows: 4th, 6th, 14th, 17th, 30th.

On the summit of Mount Washington, New Hampshire, the highest wind velocities were: 100, w., 2d; 96, nw., 3d; 78, nw., 4th; other dates on which velocities of fifty or more miles per hour were recorded are as follows: 1st, 5th, 7th, 8th, 10th, 14th, 16th, 17th, 18th, 19th, 20th, 21st, 23d, 24th, 25th.

Other stations reporting velocities of fifty or more miles per hour are as follows:

Cape Mendocino, California, 62, se., 25th.
Rochester, New York, 60, w., 2d.
Buffalo, New York, 58, sw., 2d.
Fort Canby, Washington Territory, 50, s., 4th.
Dodge City, Kansas, 52, w., 5th.

TOTAL MOVEMENTS OF THE AIR.

[*In miles.*]

In the following table are given the stations reporting the largest and smallest total movements of the air in each of the various districts:

Districts.	Stations reporting largest.	Miles.	Stations reporting smallest.	Miles.
New England	Block Island, R. I.	10,607	Eastport, Maine	5,552
Middle Atlantic states	Sandy Hook, N. J.	11,246	Lynchburg, Va.	2,574
South Atlantic states	Fort Macon, N. C.	9,384	Charlotte, N. C.	3,575
Florida peninsula	Cedar Keys	7,006	Key West	5,897
Eastern Gulf states	Pensacola, Fla	5,344	Montgomery	3,801
Western Gulf states	Indianola, Tex.	9,343	Fort Smith, Ark	3,625
Rio Grande valley	Brownsville, Tex.	6,362	Rio Grande, Tex.	5,968
Tennessee	Nashville	5,028	Chattanooga	4,250
Ohio valley	Columbus, Ohio	5,417	Indianapolis, Ind.	4,275
Lower lake region	Sandusky, Ohio	9,738	Toledo, Ohio	1,890
Upper lake region	Milwaukee, Wis.	8,093	Marquette, Mich.	5,345
Extreme northwest	Moorhead, Minn	7,603	Bismarck, Dak.	5,131
Upper Mississippi valley	Davenport, Iowa	6,190	Keokuk, Iowa	2,886
Missouri valley	Huron, Dakota	7,215	Leavenworth, Kans.	4,193
Northern slope	Cheyenne, Wyoming	7,749	Deadwood, Dak	3,856
Middle slope	Dodge City, Kan	9,423	Denver, Colo	4,964
Southern slope	Fort Stockton, Tex.	8,179	Fort Davis, Tex.	4,662
Southern plateau	Fort Grant, Arizona	5,658	El Paso, Tex	3,498
Northern plateau	Dayton, Wash. T.	4,535	Lewiston, Idaho	1,003
North Pacific coast region	Fort Canby, Wash T.	6,717	Roseburg, Oregon	1,866
Middle Pacific coast region	Cape Mendocino, Cal.	12,607	Red Bluff, Cal.	5,004
South Pacific coast region	San Diego, Cal	4,275	Yuma, Ariz.	3,942